

**SunEdison Response to Site Plan Review Application Comments:
Technical Assistance Group (TAG)'s 9/12/2016 Comments
Titcomb Landfill Solar Project, 23 South Martin Road
- Submitted to Planning Board on 10/11/2016 -**

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Attachments

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ATTACHMENT 2: Amesbury Fire Department's 9/26/2016 Letter to Planning Board regarding site access and security; includes SunEdison's request to Fire Department and response to Police Department's comments

ATTACHMENT 3: SunEdison response to initial SPR Application Comments (Police Department, Public Works, Conservation Commission - 8/25/2016)

ATTACHMENT 4: Emergency Response Plan (Appendix F from SPR Application)

ATTACHMENT 5: Massachusetts Department of Environmental Protection (MassDEP) - Post Closure Use Permit (PCUP) Approval (9/27/2016) for the Titcomb Landfill Solar Project

ATTACHMENT 6: Pre-Permitting Correspondence and Comments/Responses on the PCUP Application

ATTACHMENT 7: Decommissioning Plan and Estimate (Appendix O from Site Plan Application)

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ATTACHMENT 11: One Line Drawing (from Appendix G of the SPR Application)

ATTACHMENT 12: Solar Module Fact Sheet

XI.S.5.1 - Site Control:

Provide documentation to establish site control. Copies of lease agreement or other legal agreement documenting period of lease, any restrictions on use, special conditions and portion of property being leased may be submitted.

The City of Amesbury and SunEdison Origination1, LLC executed a Net Metering Credit Purchase and Sale Agreement on November 19th, 2015. The agreement establishes site access through Exhibit B of the Terms and Conditions. Access is limited to the specific tasks required: for design, engineering, construction, installation, and maintenance of the system. SunEdison is required to exercise reasonable care with Applicable Law while on site, including storing equipment properly and not obstructing access for other uses.

The agreement outlines confidential commercial terms and therefore cannot be shared. The Planning Board is welcome to reach out to the City of Amesbury for confirmation of these terms if required. If additional information or confirmation is required beyond what is made available by the City, then we request approval conditioned upon planning board satisfactory receipt of required information.

XI.S.5.2 - Dimensional and Density Regulations:

Provide table showing that these regulations are being met.

Please see the revised Site Plan set attached hereto as ATTACHMENT 1. The Titcomb Landfill Solar Project has been designed to meet the dimensional and density regulations as described in the Zoning Ordinance Sections VI.E.5.c., VI.F and XI.S.5.2, to wit:

- As shown on Sheets C-2 of the attached Site Plan, the project will comply with the 50' minimum front and side setbacks per Section XI.S.2 of the Zoning Ordinance – with no solar photovoltaic (PV) modules located within 50' of property lines. The setback is indicated on the revised, attached plan set by a dashed line labeled "50' PROPERTY LINE SETBACK" (made with a thicker line in the revised plan set and indicated in the General Notes section).
- As shown on Sheet C2, the Property is approximately 14.4 acres, which exceeds the minimum lot area of 1 acre required within the Renewable Energy Development District (REDD) as indicated in Section XI.S.5.2, and exceeds the minimum lot area of 2.5 acres required within the underlying Office Park (OP) District as indicated in Section VI.F, Table of Dimensional and Density Regulations.
- As shown on Sheet C-7, the project will have approximately 70% open space remaining on the parcel, which exceeds the Minimum Open Space requirement of 40% in the underlying OP District (Section VI.F, Table of Dimensional and Density Regulations).

XI.S.5.3 - Compliance with Laws, Bylaws & Regulations:

Provide details on actual construction of layout of cables connecting panels to each other and to the inverters and transformers. Where is the general location of the overhead cables connection to Ngrid power lines?

Please see revised Site Plan Sheets C-2, C-6.2 and C-7 (ATTACHMENT 1). All inter-module cabling will be within low, above ground cable trays. The only above-ground utility lines will be at the interconnection to National Grid's existing distribution system. The interconnection will include four new poles and overhead lines installed between the transformer and Hunt Road. These are shown on the revised Site Plan and this is further addressed in our response to the comment on Ordinance section XI.S.7.a.iii, below. Please note that these are permit-level designs only, and that final, "issued for construction" (IFC) drawings – including more detail information on intramodule connections - will be submitted prior to acquisition of the building permit and prior to any

construction activities. The applicant respectfully requests site plan review approval conditioned upon receipt of detailed IFC drawings prior to the start of construction activity.

XI.S.5.7 – Utility Notification

Provide copy of application made to NGrid and documentation from them that it can and will connect the proposed customer-owner generator into its power grid.

A copy of the National Grid System Impact Study was provided to Planning staff on September 22nd, 2016. The study describes in detail the upgrades required in order to connect the system. SunEdison will place a deposit for these upgrades when the project is ready to start construction and sign an Interconnection Service Agreement which commits National Grid to conducting the necessary design and installation work.

XI.S.5.9 - Operation, Monitoring and Maintenance:

Provide a letter from the Fire Department stating that the proposed plans adequately represent the improvements to access and security measures as suggested to the applicant

SunEdison worked with the Amesbury Fire Department (Fire Department) throughout Project planning, starting with a meeting with Chief Ken Berkenbush and Deputy Chief Jim Nolan on December 18, 2015. Following this meeting, and based on the recommendations of the Fire Department, SunEdison added a bisecting, emergency access road to provide emergency vehicular access across the solar array. A project engineer from TRC (SunEdison's consultant) met with the Chief and Deputy Chief onsite on January 13, 2016 to discuss the proposed emergency/fire road and turn arounds. The Fire Department had no additional comments and were satisfied with the access as designed. On September 22, 2016, the applicant's agent (Rich Jordan of TRC) sent an email to Deputy Chief Nolan requesting a review of the project and proposed emergency plan and procedures. Mr. Nolan responded with a letter provided directly to the Planning Board of Amesbury, noting "The proposed plans for the Titcomb Landfill Solar Project adequately represent the suggestions made to the applicant for access and security by the Amesbury Fire Department." A copy of Deputy Chief Nolan's letter is included as ATTACHMENT 2.

Further, and as noted in the Applicant's response to initial comments on the SPR received from the Amesbury Police Department (March 3, 2016), both the Amesbury Fire Department and Police Department will be invited to the project construction kickoff meeting to be held with the building contractor and the Applicant prior to construction. Post construction, the Applicant's facility operations group (i.e. the professionals who actively operate and maintain the Project) will be available for questions and will gladly provide access and safety awareness training to the FD and PD upon request. A copy of the response to initial questions/comments from the Police, Department of Public Works and Conservation Commission are included herein as ATTACHMENT 3.

If additional 'sign-off' is requested by the Planning Board, SunEdison respectfully requests approval of the Titcomb Landfill Solar Project conditional to receiving review and approval of a final plan from the Fire Department prior to construction.

XI.S.5.10 - Safety and Environmental Standards:

- a. Emergency Services: - Provide a letter from the Fire Department signing off on the Emergency plan and procedures.*

As described in the previous response, Amesbury Fire Department Deputy Chief Nolan provided a letter directly to the Planning Board of Amesbury, noting "The proposed plans for the Titcomb Landfill Solar Project adequately represent the suggestions made to the applicant for access and security by the Amesbury Fire Department." A copy of Deputy Chief Nolan's letter is included as ATTACHMENT 2. If additional 'sign-off' is requested by the

Planning Board, SunEdison respectfully requests approval of the Titcomb Landfill Solar Project conditional to receiving review and approval of a final plan from the Fire Department prior to construction.

- b. *Land Clearing, Soil Erosion and Habitat Impacts: - Provide comments from DEP on the landfill closure application.*

The MassDEP issued its approval of the Post Closure Use of the Titcomb Landfill for the project on 9/27/2016. The approval and all associated correspondence and MassDEP comments (pre-permit) are included as ATTACHMENT 4.

- c. *Unauthorized Access: Explain how access to the solar panels within limit of work and other areas of this operation will be restricted to authorized personnel only. Is there a fence or other protective measures limiting access?*

As described in Section 4.10 of the original Site Plan Review application, the Project will be surrounded by a metal fence with a locked slide-gate at the Hunt Road entrance. The fence is indicated on the Site Plans (ATTACHMENT 1).

XI.S.5.12 - Financial Surety:

The applicant needs to submit a fully inclusive estimate of the costs associated with removal of the facility as outlined in this Section and prepared by a professional engineer. The amount shall include a mechanism for Cost of Living Adjustment.

Financial Surety and facility removal is addressed in the response to the comment on Section XI.S.7.j., below.

XI.S. 7.a - Proposed Installation Plan:

XI.S.7.a.i - Location of the proposed solar system panels, arrangement of arrays, appurtenant structures, transmission infrastructure, foundations, and associated ground equipment, fencing, exterior lighting and access to them for maintenance and emergencies;

Please see the revised Site Plan (Attachment 1) Sheets C-2, C-6.1 and C-7 for depictions of these features. Please note that final, issued for construction (IFC) drawings will be provided prior to construction of the project, per requirement of the Building Permit. If there are specific requests for information that does not appear to be provided on the permit-level site plans provided herein, then SunEdison respectfully requests Site Plan approval conditioned upon receipt of any required data/project component information prior to issuance of the building permit and start of construction activity.

XI.S.7.a.ii - Outline of all existing buildings, including purpose (e.g. residence, garage, storage shed, etc.) on site parcel and all adjacent parcels within 300 feet. Distance from the solar facility to each building shall also be shown on the plan;

The location and description of all buildings within 300 feet of the proposed solar photovoltaic modules, as well as indicators of distance to nearest modules, has been added on a new sheet C-9, including in the revised Site Plan (ATTACHMENT 1).

XI.S.7.a.iii - Any overhead utility lines;

All inter-module cabling will be within low, above ground cable trays. The only above-ground utility lines will be at the interconnection to National Grid's existing distribution system. The interconnection will include four new poles and overhead lines installed between the transformer and Hunt Road. The poles house standard required equipment, as follows:

1. Customer Load Break – Lockable gang-operated switch and riser pole
2. Utility Primary Meter

3. Utility Recloser
4. Utility Load Break- Lockable gang-operated switch

The location of the overhead lines are indicated on revised site plan (ATTACHMENT 1) sheet C-2, with the location of the four new poles shown (in yellow) on sheet C-7.

XI.S.7.e - Legal Documents:

Copies of existing and proposed legal documents pertaining to public and private easements, covenants and agreements affecting the use of the site parcel - These documents need to be provided.

A title search was completed by SunEdison that confirmed there are no public or private easements, covenants, or agreements that would impact the use of the parcel. A copy of this title search was provided to Planning staff.

Additionally, the project has requested temporary access to the landfill during construction via the City-owned parcel to the south of the landfill. Energy Director Barrasso prepared a draft of special conditions to license the applicant to use the town-owned parcel south of the Titcomb Landfill ("Trader Allen's parcel" – map 87 lot 11) for a temporary access and laydown area during construction. The document, entitled "Special Conditions for Property Access License – Former Trader Allen's Truck Stop Site at 39 South Hunt Road" will be completed by the developer prior to use or access on the Trader Allen's property. The draft use agreement is included herein as ATTACHMENT 8.

XI.S. 7 .f - Other Permits:

Copies of other local permit approvals and any current violation notices and action being taken need to be provided- See comments from Conservation Commission. The Project also requires filing with DEP for changes to the final closure plan. Provide copies of permit application and approval made to DEP for modifications to the land fill closure plan

A building permit from the Town of Amesbury will be required prior to construction. Conservation commission comments were received and addressed in the first round of responses to Planning Board comments, included herein as ATTACHMENT 2. There are no known current violation notices of any local permits or approvals.

The Project has received a post closure use permit (PCUP) from the MassDEP. The PCUP is included herein as ATTACHMENT 5 and the associated pre-permit correspondence/comments is included herein as ATTACHMENT 6. As described in the permit approval, "On July 26, 2013, the MassDEP approved the landfill closure certification report." Further, the approval states:

"The (PCUP) Application demonstrates pursuant to 310 CMR 19.143(3) that the installation and operation of the solar PV facility as proposed and approved by this decision:

- Will not result in a disturbance of the Landfill cap that could cause an adverse impact to public health, safety or the environment;
- Will not impair the integrity or functioning of the final cover, the components of the containment system, the landfill gas control system, and the environmental monitoring systems; and
- Provides for the maintenance of the Landfill cap's storm water drainage facilities, basins, swales, and other erosion/sedimentation controls."

If additional information is required by the Planning Board pursuant to this section of the Code of Ordinances, then SunEdison respectfully requests approval of the Site Plan Review application conditioned on receipt of other documentation requested prior to the start of construction activities.

XI.S.7.h - Stormwater Management Report:

The comments from the City engineer should be addressed. Peer review of the storm water management recommended.

The Applicant provided a response to the engineer comments prior to the 9/26/2016 Planning Board meeting. A copy of the response to initial questions/comments from the Police, Department of Public Works and Conservation Commission are included herein as ATTACHMENT 3. It is the Applicant's understanding that City of Amesbury has already commissioned a review of the stormwater management plan.

Stormwater management is further discussed in the PCUP approval (ATTACHMENT 5, with pre-permit correspondence on the PCUP application provided in ATTACHMENT 6).

XI.S.7.j - Financial Surety:

Description of financial surety pursuant to this Section;

*XI.S.5.12. **Financial Surety:** The Applicant shall provide a form of surety, either through escrow account, bond or otherwise, to cover the cost of removal in the event the City must remove the facility, of an amount and form determined to be reasonable by the PGA. Such surety will not be required for municipal and state-owned facilities. The proponents shall provide a security sufficient to cover the cost of removal for the first ten (10) year period. Every five (5) years thereafter, the proponent shall return to the PGA to renew the surety in the amount sufficient to cover the costs of removal of the facility by the end of that time. The applicant shall submit a fully inclusive estimate of the costs associated with removal of the facility as outlined in this Section and prepared by a professional engineer. The amount shall include a mechanism for Cost of Living Adjustment.*

The Financial Surety and additional details of the Decommissioning Plan are further discussed in Section 5.10 of the original Site Plan Review application and a letter describing the estimate of costs for removal of the facility with a timeline for cost adjustment was included in Appendix O of the original Site Plan Review application, copied herein as ATTACHMENT 7. The decommissioning letter was stamped by a Massachusetts PE and the cost table from said decommissioning letter is shown below.

ESTIMATED DECOMMISSIONING COSTS		
Component / Activity	2016 Cost	2041 Cost
Permitting	\$15,000	\$27,800
Labor Cost	\$73,000	\$135,400
Loam, Seed and Fill	\$10,300	\$19,100
Equipment and Shipping	\$23,500	\$43,600
Scrap Value	(\$50,600)	(\$93,800)
Net Total:	\$71,200	\$132,100

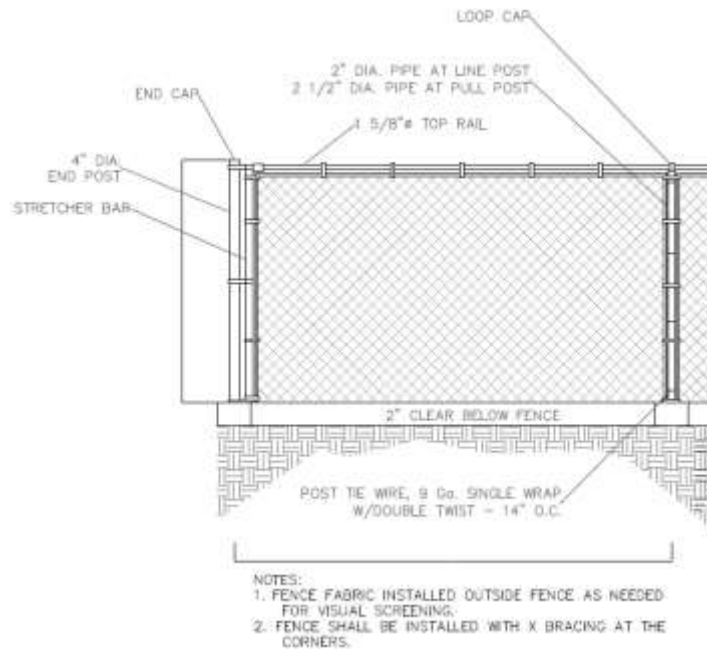
Prior to construction, the project developer will provide the decommissioning costs, per ATTACHMENT 7 (original application Appendix O) in a form (bond, cash, letter-of-credit, etc.) acceptable to the Town of Amesbury.

XI.S.7.k- Very Large Solar Energy Facilities:

*i - **Visualizations:** The Planning Board has not received any visualization documents. The Board may request alternative documents after further review.*

The Applicant's permit team had multiple conversations about potential visual components of the project and a visual assessment was included in the Site Plan Application as Appendix N (included herein as ATTACHMENT 10). The visual assessment includes photographic simulations of the Project as to be seen from South Martin Road (two locations) as well as a line-of-sight analysis from Woodridge Avenue.

Note that the visual simulations did not include fence fabric, as we generally do not include it on most projects. The applicant included the following fence detail in the site plan (ATTACHMENT 1, sheet C-6.2):



Based on recent and ongoing correspondence with a landowner adjacent to the Titcomb Landfill, SunEdison is willing to install slats or fabric on the fence on the west side of the array (adjacent to South Martin Road) to provide additional visual screening. SunEdison is continuing discussions with the abutter to see if there are any other measures that can be taken to alleviate his concerns. Any additional measures proposed would be in line with the landfill's permit requirement to use only low-growing (shallow-rooted) vegetation in order to maintain the integrity of the cap.

SunEdison will continue contact with surrounding landowners to ensure they have appropriate contacts should there be any maintenance concerns with the fence during the life of the project.

iii - Technical Documentation: Details should be submitted by the applicant along with supporting documents and calculations used for the design of the solar facility in order to reach the nameplate capacity of the proposed facility

A Massachusetts PE-stamped one line diagram was included in the Site Plan Review Application Appendix D – Site Plans, Drawings and Technical Specifications. The one line diagram is used by the project electrical engineer and the receiving utility company (National Grid) to specify the components of the solar energy system and to determine and certify the output of the designed system. The one line diagram for the Titcomb Landfill Solar Project is included herein as ATTACHMENT 11. Design/output details on the modules is included herein as ATTACHMENT 12.

iv - Structural drawings: The applicant should submit engineering drawings for foundations and structures with a report from a registered PE showing that the installation of all structures for the proposed solar facility shall be in accordance with the most recent version of the State Building Code. (Per City Planner's 9/28/2016 email: "Indicate in your response the information that you have included in the application – diagrams, written text, plan sheets, calculations etc. Also describe what steps need to be taken before full construction drawings can/will be produced.")

Cap Integrity and Loading Design: Design engineering calculations for the construction of the solar facility on the Landfill cap are included throughout the PCUP application submitted as Appendix G with the Site Plan Review Application. The PCUP application is sealed/stamped by a Massachusetts PE (the MassDEP approval of

the PCUP application is included herein as ATTACHMENT 6-A). A portion of the analysis criteria for the PCUP application is as follows:

4.3.1 Bearing Capacity

The allowable net bearing capacity for the ballast block on the landfill cap was determined to be 1,000 psf for the large block ballast blocks and 1,500 psf for the smaller ballast blocks. The allowable bearing capacity calculation (see Appendix C) used the conventional Terzaghi method. The analysis assumed the supporting landfill subgrade had the properties of loose sandy silt. A factor of safety of 3 was applied to the ultimate bearing capacity and limiting immediate, or elastic, settlement of 0.25 inches was assumed. The actual maximum contact stress beneath the large ballast block is 500 psf and the smaller block is 700 psf. With this stress, the actual factor of safety against bearing failure is approximately 6 and the immediate settlement is on the order of .05 inches. The permanent emergency access road was designed based on TRC's engineering judgement to sustain the weight of a vehicle without negatively affecting the landfill. A heavy truck (e.g. a firetruck) on the access road will not increase settling at the landfill because the weight of the truck would be evenly distributed across a large surface area under the gravel fill of the access road.

5.1 Storm Water Run-off Control Plan

The existing landfill has a stormwater run-off control system designed and constructed during the landfill closure, including swales and a drainage basin. Peak design flows determined using the methodology of Technical Release 55: Urban Hydrology for Small Watersheds (TR-55) and Technical Release 20: Computer Program for Project Formulation Hydrology (TR-20), Natural Resources Conservation Service – USDA. For the purposes of evaluation the impact of the solar array on the landfill stormwater peak run-off and swale flow depths, a TR-20 analysis was performed with the addition of the solar array (Post-Development) assuming the current 2015 conditions as the “pre-development” case. The computer program HydroCAD version 10.0, HydroCAD Software Solutions LLC, was used to model the pre and post conditions. “

Structural Features Design: The ballast and racking system for the solar array were designed by RBI. RBI's design drawings are stamped by a Massachusetts PE and included herein as ATTACHMENT 9-A. RBI also provided a 108-page loading analysis report that was used in the loading and cap integrity analysis for the PCUP; this report includes technical calculations and tables has not been included, but can be provided to the City if requested.

Prior to the start of construction activity on the site, the applicant will submit for final approval

XI.S.8.1 - Lighting:

Is any emergency lighting required or proposed around the electrical pad enclosures? Provide details if such lighting is required or proposed.

It has been the applicant's experience on similar projects that lighting is generally not proposed or required around the inverter/transformer pads. There is no electrical generation or transmission on solar projects at night, so lighting is not generally deemed necessary. In its review of the project, the Amesbury Fire Department did not comment on the need for lighting. However, and as discussed with the Amesbury City Planner, the applicant would be amendable to agreeing to install small, solar-powered (self-contained) motion-sensing lights at or near the transformer pad, if required by the town as a condition of the Site Plan Review approval.

XI.S.8.5 - Utilities and Stormwater Drainage:

Where will the utility connections be located -Above or underground? Since this is a landfill, what is DEP requiring on this site?

Cabling on the project will be in cable trays, or buried where the lines cross under the access road. See sheets C-6.2 for updated details of the cable tray and road crossing design. The interconnection from the project to the National Grid distribution system will be overhead, concentrated on the South Hunt Road side of the project

and including four poles that will carry a distribution-level load line to the existing overhead distribution line on South Hunt Road (see Site Plan sheets C-2 and C-7).

The MassDEP has issued an approval for the PCUP and stormwater review (included with the PCUP). The applicant's stormwater analysis determined that changes to landfill stormwater runoff due to the solar array are insignificant and no changes to the existing landfill drainage systems are needed. In its decision to grant PCUP approval, the MassDEP noted that the application demonstrated that the installation and operation of the solar PV facility as proposed and approved "Provides for the maintenance of the Landfill cap's storm water drainage facilities, basins, swales, and other erosion/sedimentation controls." A copy of the PCUP decision is included herein as ATTACHMENT 5.

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